

**REMARKS**

**I. Introduction**

In response to the pending Office Action, Applicants have incorporated the limitations of claim 27 into claim 13 and the limitations of claim 28 into claim 16 in order to further clarify the present invention. Claims 11, 15, 20, 22, 23, 25, 27, 28, 31, 34-37 and 39 were cancelled, without prejudice. Claims 34-37 were cancelled in order to overcome the § 112 rejections. In addition, the specification was amended to overcome the objection. No new matter has been added.

For the reasons set forth below, Applicants respectfully submit that all pending claims as currently amended are patentable over the cited prior art.

**II. The Rejection of Claims 11, 13, 15-16, 19, 23-30 And 38 Under 35 U.S.C. 103**

Claims 11, 13, 15-16, 19, 23-30 and 38 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Elian et al. (US 2003/0008240) in view of Kawamura et al. (USP No. 6,465,146) and further in view of Grabowski et al. (USP No. 5,210,548); claims 20 and 22 under 35 U.S.C. § 103(a) as being unpatentable over Hayase et al. (USP No. 5,403,695) in view of Grabowski; and claims 31-34, 36-37 and 39-41 under 35 U.S.C. § 103(a) as being unpatentable over Breyta et al. (USP No. 5,585,220) in view of Grabowski. As claims 11, 15, 20, 22, 23, 25, 31, 34-37 and 39 were all cancelled, the rejection of these claims is moot. Applicants respectfully submit that Elian, Kawamura, Breyta and Grabowski fail to render the pending claims obvious for at least the following reasons.

With regard to the present invention, amended claims 13 and 16 both recite a pattern formation method comprising the steps of forming a resist film of a positive chemically

amplified resist material; and forming a resist pattern by developing said resist film with a developer after irradiating, through a mask, said resist film with exposing light having a light component entering said resist film at the Brewster's angle, wherein said chemically amplified resist material includes a dissolution inhibitor for generating sulfonic acid through irradiation with light, and the dissolution inhibitor for generating sulfonic acid through irradiation with light is an ester of styrenesulfonic acid.

One feature of claims 13 and 16 of present invention is that the method uses exposing light having a light component entering at the Brewster's angle, which angle lowers the solubility contrast, to lower the dissolving rate of an unexposed portion of a positive resist film and adds a dissolution inhibitor which generates sulfonic acid through irradiation with light to compensate the dissolving rate of the exposed portion (see, page 3, lines 5-25 of the specification).

It was alleged that Grabowski discloses maximizing the transmission of the exposure light into a photosensitive layer (Page 5, 3rd paragraph). However, according to the present invention, a resist film made of a positive chemically amplified resist material is irradiated with the exposure light having a light component entering at the Brewster's angle to lower the dissolving rate of an unexposed portion of the resist film. Grabowski does not appear to teach or suggest the use of light entering at the Brewster's angle. Therefore, Grabowski fails to teach or suggest the above cited feature of present invention.

The Examiner also asserts (page 4, last paragraph) that Kawamura discloses a radiation sensitive printing plate precursor and a polymer including, in a positive photosensitive layer, a sulfonic acid ester group as a functional group (see, column 5, lines 5-27). However, Kawamura

does not disclose the dissolution inhibitor of the present invention. In general, dissolution inhibitors refer to materials which inhibit dissolution of substances in alkaline aqueous solutions as stated in the attached paper, but Kawamura does not disclose or suggest the dissolution inhibitors being defined in this way. Accordingly, Kawamura fails to disclose a sulfonic acid ester as a dissolution inhibitor for generating sulfonic acid through irradiation with light. Elian is not relied upon to correct this deficiency.

In addition, Elian belongs to the field of semiconductor fabrication process, which is different from the field to which Kawamura belongs, i.e. printing plate precursor for printing. As such, even if the references taught each of the claimed limitations, there is no motivation to combine these two references in the manner set forth in the Office Action. Accordingly, Applicant's respectfully request that the § 103 rejection of claims 13 and 16 be withdrawn.

Claim 32 recites a pattern formation method comprising the steps of: forming a resist film of a positive chemically amplified resist material; and forming a resist pattern by developing said resist film with a developer after irradiating, through a mask, said resist film with exposing light having a light component entering said resist film at the Brewster's angle, wherein said chemically amplified resist material includes a dissolution inhibitor for generating carboxylic acid through irradiation with light, and wherein the dissolution inhibitor for generating carboxylic acid through irradiation with light is an ester of acrylic acid, methacrylic acid or  $\alpha$ -trifluoromethylacrylic acid.

Similarly, claim 33 is characterized by using, for pattern exposure, a chemically amplified resist material including a base polymer which generates carboxylic acid through

irradiation with light and which is made of an ester of polyacrylic acid, polymethacrylic acid or poly( $\alpha$ -trifluoromethylacrylic acid).

In contrast to the present invention, Breyta does not disclose the dissolution inhibitor which generates carboxylic acid through irradiation with light and which is made of an ester of acrylic acid, methacrylic acid or  $\alpha$ -trifluoromethylacrylic acid. Furthermore, the above-mentioned materials are not obvious to those skilled in the art for the use of a dissolution inhibitor. Moreover, as stated above, Grabowski, which discloses maximizing the transmission of the exposure light into a photosensitive layer, fails to disclose that the resist film is irradiated with exposure light having a light component entering at the Brewster's angle to lower the dissolving rate of an unexposed portion of the resist film. As such, the combination of Breyta and Grabowski fail to teach or suggest claims 32 and 33 of the present invention.

As is well known, in order to establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. In re Royka, 180 USPQ 580 (CCPA1974), and as Eliau, Kawamura, Breyta and Grabowski, at a minimum, both fail to teach or suggest a pattern resist method wherein said resist film with exposing light has a light component entering said resist film at the Brewster's angle, and wherein said chemically amplified resist material includes a dissolution inhibitor for generating sulfonic acid through irradiation with light, and the dissolution inhibitor for generating sulfonic acid through irradiation with light is an ester of styrenesulfonic acid, an ester of acrylic acid, methacrylic acid or  $\alpha$ -trifluoromethylacrylic acid or an ester of polyacrylic acid, polymethacrylic acid or poly( $\alpha$ -trifluoromethylacrylic acid), it is submitted that Eliau, Kawamura, Breyta and Grabowski, alone or in combination, do not render amended claims 13, 16, 32 or 33, or any pending claims dependent thereon, obvious.

**III. All Dependent Claims Are Allowable Because The Independent Claim From Which They Depend Is Allowable**

Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplimatic Engineering Co.*, 819 F.2d at 1100, 1108 (Fed. Cir. 1987). Accordingly, as claims 13, 16, 32 and 33 are patentable for the reasons set forth above, it is respectfully submitted that all pending dependent claims are also in condition for allowance.

**IV. Conclusion**

Having fully responded to all matters raised in the Office Action, Applicants submit that all claims are in condition for allowance, an indication of which is respectfully solicited.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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